

Enhancement and Faithfulness in Non-native Phonology



1. Principles

- Enhancement
- Faithfulness

2. Evidence

- Avoidance of neutralization
- Avoidance of assimilation
- Preservation of phonemic contrasts
- Progressive assimilation
- Preference to insertion over deletion

Contents



Enhancement and Faithfulness in L2

1. Avoidance of neutralization

2. Avoidance of assimilation

3. Preservation of the contrasts

4. Progressive assimilation

5. Preference of insertion over deletion

Discussion

“Enhancement” in phonology

- The process of **enhancement**
 - adds motoric instructions to phonological input
 - to ENHANCE the perceptual saliency
 - of the **jeopardized** sounds
 - as a consequence of vowel reduction, glottalization, coarticulation of voicing, or flapping
 - (cf. **Keyser & Stevens**, 2006)

“Faithfulness” in phonology

- **Optimal** forms in a grammar are in part determined by **Faithfulness** constraints
 - Every **input** sound must have a corresponding **output** sound which is identical and in the same position
 - Examples are Max-IO, Dep-IO, Ident-IO
 - (**Hancin-Bhatt**, 2008)

Non-native phonology

- Many disagreeing views
 - on the non-native **production processes** (Eckman, 2004)
- Many agreed
 - The **output** sound sequence is interfered
 - by the phonology of the learners' native language (Broselow, 1984; Flege & Wang, 1989; Altenberg, 2005).
- **GOAL**
 - Non-native **production processes**
=> **Enhancement**
 - Non-native **output sound** sequence
=> **Faithfulness** to target phonology

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Evidence 1: Avoidance of neutralization

Native **Korean** Phonology


 /bʌs/ [bʌt̚] *friend*  /bitj/ [bit̚] *light*

- Consonants are unreleased syllable finally
- C -> [-cont] / _____ \$

Target **English** Phonology

- /bʌs/ [bʌs] *bus* • /bitj/ [bitj] *beach*
- Syllable final friction allowed

Non-native **Korean English**

 /bʌs/ [bʌsʷ] *bus*  /bitj/ [bitji] *beach*

- A vowel inserted
- Syllable final friction allowed

Avoidance of neutralization (cont.)

Non-native Korean English

- /bʌs/ [bʌsʷ] *bus*
- **Vowel** inserted
- [s] is **ENHANCED** by the insertion of the vowel
- [s] is **FAITHFUL** to the target English sound [s]

Native Korean Phonology

- /bʌs/ [bʌtʰ] *friend*
- s -> t
- [tʰ] **loses** the perceptual **saliency**
- [tʰ] output does **not** keep the **identical** phonetic feature of input /s/, and becomes **indistinctive** from another phoneme /t/

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Evidence 2: Avoidance of assimilation

Native **Korean** Phonology

 /batmægi/ [panmægi] *weed*  /soknuns'ʌp/ [soŋnuns'ʌp] *lash*

- Consonants become a nasal before a nasal consonant

C -> [+nasal] / _____ [+nasal]

Target **English** Phonology

- /bætmæn/ [bætmæn] *batman* • /sɪknɪs/ [sɪknɪs] *sickness*
- Nasal assimilation does not apply

Non-native **Korean English**

 /bætmæn/ [bætuɰmæn] *batman*  /sɪknɪs/ [sɪkuɰnɪsɯ] *sickness*

- A vowel inserted
- Nasal assimilation does not apply

Avoidance of assimiation (cont.)

Non-native Korean English

- /bætmæn/ [tʊm] *batman*
- **Vowel** inserted
- /t/ is **ENHANCED** by the insertion of the vowel
- [t] is **FAITHFUL** to the target English sound [t]

Native Korean Phonology

- /batmægi/ [nm] *weed*
- t -> n
- [n] **loses** the perceptual **saliency** by consecutive nasal stops
- [n] output does **not** keep the **identical** phonetic feature of input /t/, and becomes **indistinctive** from another phoneme /n/

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Evidence 3: Preservation of phonemic contrasts

Native Korean Phonology

 /ba*l*+i/ [ba*r*i] *foot* +Nom.

 /ba*l*/ [ba*l*] *foot*

- [r] in the beginning and [l] at the end of a syllable
- [r] -> [l] / _____ \$



Target English Phonology

• /ba*r*/ [ba*r*] *bar*

• /bo*l*/ [bo*l*] *ball*

- Lateralization does not apply

Non-native Korean English

• Beginners:  /ba*r*/ [ba] *bar*  /bo*l*/ [bo*l*] *ball*

• Advanced:  /ba*r*/ [ba*r*] *bar*  /bo*l*/ [bo*ə*] [bo*l*] *ball*

- Either /r/ or // is deleted
- Phonemic contrasts are kept; liquid alternation does not apply

Preservation of phonemic contrasts (cont.)

Non-native Korean English

- /bar/ [ba] *bar*
- /r/ is deleted
- /r/ [] is **ENHANCED** by blocking the neutralization of /r, l/
- The deletion is **FAITHFUL** to the English phonemic contrast [r, l]

Native Korean Phonology

- / bar / [ba] *foot*
- Liquid -> l / _____ \$
- Only the **allophone [l]** is allowed in syllable final position
- /L/ [r,l] output becomes **indistinctive** from **another** English phoneme /l/

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Evidence 4: Progressive assimilation

Native Korean Phonology



 /tʰʌn#li/ [ll] *thousand#ri (393m)*  /tʰʊl#ni/ [ll] *dentures*

- /n/ and /l/ become [ll] by Liquid assimilation
- n -> l / l

Target English Phonology

- /peɪnləs/ [nl] *painless*
- /ɪlnɪs/ [ln] *illness*
- Liquid assimilation does not apply

Non-native Korean English

 /peɪnləs/ [nn] [ll] *painless*  /ɪlnɪs/ [ll] *[nn] *illness*

- Progressive assimilation by /n/ [nn] and /l/ [ll]
- Regressive assimilation never occurs in /l/ *[nn] *illness*
- L1 assimilation rule in some /n/ [ll] *painless*

Progressive assimilation(cont.)

Non-native Korean English

- /peɪnləs/ [nn] *painless*
- /ɪlnɪs/ [ll] *illness*
- l -> n / n ____
- **ENHANCED** for the first phone of the pair
- **FAITHFUL** to the first phone of the pair

Native Korean Phonology

- /tʃʌnli/ [ll] *[nn] *thousand ri*
- /θwɒlni/ [ll] *[nn] *dentures*
- n -> l / l
- /n/ [l] becomes **indistinctive** from //
- /nl/ [ll] becomes **indistinctive** from /nl/ [ll]

Contents

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Evidence 5: Preference of insertion over deletion

Native Korean Phonology

- ***st**am  tam [tam] *wall*  /nʌ**ks**/ [nʌ**k**] *spirit*
- Onset permits one consonant
- Coda permits one consonant; and an extra consonant is deleted

Target English Phonology

- /**str**aɪk/ [**str**aɪk] *strike*
- /tæ**ks**/ [tæks] *tax*
- Onset permits a cluster
- Coda permits a cluster

Non-native Korean English

 **strike** [sʷtʷrʌɪkʷ] *strike*  /tæ**ks**/ [tæksʷ] *tax*

- Vowels are inserted in an onset cluster
- A vowel is inserted in a coda cluster

Preference of insertion over deletion (cont.)

Non-native Korean English

- /tæks/ [tæksɯ] *tax*
- Ø -> ɯ / CC____#
- s# is **ENHANCED** by the insertion of vowel
- Keeping /s/ is **FAITHFUL** to the target English phoneme [s] than Ø

Native Korean Phonology

- /nʌks/ [nʌk] *spirit*
- s -> Ø
- A consonant is deleted
- [s] becomes **lost** from the sound string of this word

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Discussion

- **Enhancement and faithfulness**
=> principles of non-native speech
 1. **Enhancement** by **insertion** than deletion,
 2. **Faithfulness** by keeping the **phonetic feature** of input

- **Evidence from Korean English**
 1. Avoidance of neutralization
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Discussion (continued)

- **Consequence of Enhancement and Faithfulness**
 1. **Longer** speech by vowel **insertion**
 2. **Slower** speech by **less** reduction or **deletion**
 3. **Less linking** by **avoiding assimilation**
=> **Adamant impression of L2 speech**

Discussion (continued)

Theoretical implication in OT

1. Max-IO over Dep-IO: No deletion and some insertion
/tæks/ [tæksʊ] *tax* in L2 ; /nʌks/ [nʌk] *spirit* in L1
2. Max-IO compromised with the preservation of phonemic contrast
/bɑr/ [bɑ] *bar* in L2 ; /bɑr/ [bɑl] *foot* in L1
3. Ident-IO(F) over Dep-IO: Feature preserved and some insertion
/bætmæn/ [tʊm] *batman* in L2 ; /batmægi/ [nm] *weed* in L1

• Terminology

- Max-IO: The output must preserve all segments in the input.
(No deletion)
- Dep-IO: Output segments must have counterparts in the input.
(No epenthesis)
- Ident-IO(F). Output and the input segments share a feature [F].
(No feature changing/substitutions.)

Discussion (continued)

- **Theoretical implication in Markedness**
 - => Enhancement more important than markedness
 - eg.) Marked [s'] and [p'] are chosen than unmarked [t]
 - cf.) /bʌs/ [p'ʌs'ʊ] *bus* in L2
[bʌtʰ] *friend* in L1



ANY QUESTIONS?

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Thank you!